***Supply Chain Management – Strategy***

***Design for Logistics***

***Chapter 11***

|  |  |  |
| --- | --- | --- |
|  | 🡨 Flow of Information 🡨 |  |
|  | Supplier | 🡪 | Manufacturer | 🡪 | Distributor | 🡪 | Retailer | 🡪 | Customer |  |
|  | 🡪 Flow of Material 🡪 |  |

|  |
| --- |
| **Design for Logistics****Chapter 11.** |
| *Coordinating supply chain design with product development to impact logistics through* *packaging, processing, and standardization.* |

|  |  |  |
| --- | --- | --- |
| **Design** |  | **Example** |
| Design Supply Chain and Development ChainDesign material and processesDesign logisticsDesign production | 🡪🡪🡪🡪 | PUSH-PULLDesign for LogisticsSupplier IntegrationMass Customization |

**Design Supply Chain and Development Chain**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|  | Chain Design | 🡪 | Drivers |  |
|  | Supply ChainDesign |  | >Demand uncertainty>Economies of scale>Lead time |  |
|  | Development ChainDesign |  | >Product/technology clockspeed. Project Introduction. Innovative product vs. Functional product>Make/buy decisions. Outsourcing Decisions. Modular product vs. Integral product combined with knowledge or capacity.>Product structure (Design for logistics). Packaging, parallel processing, standardization. |  |
|  |  |  |  |  |

**Supply Chain**. Push vs. Pull

|  |  |
| --- | --- |
| Demand uncertainty: Economies of scale: Lead time: | High uncertainty (PULL) vs. Low uncertainty (PUSH)Low dependence (PULL) vs. High dependence (PUSH)Short lead times (PULL) vs. Long lead times (PUSH) |

**Development Chain**. Innovative (Modular) vs. Functional (Integral)

|  |  |
| --- | --- |
| Clockspeed:  | Innovative (Fast) vs. Functional (Slow) |
| Project Variety: | Innovative (High) vs. Functional (Low) |
| Profit Margins: | Innovative (High) vs. Functional (Low) |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |
|  | **Product Design****Development Chain and Supply Chain Strategy** | *Supply Chain**Strategy* |  |
|  | LowDemandUncertainty(PUSH) | HighDemandUncertainty(PULL) |  |
|  | *Development**Chain* | *Product**Design* | ModularProduct | FastClockspeed | *Push* | PULL |  |
|  | IntegralProduct | SlowClockspeed | PUSH | Push-Pull |  |
|  |  |  |  |  |  |  |  |

**Design for Logistics (DFL) – Inventory, Transportation**

|  |
| --- |
| Packaging.  >Design dimensions to reduce space. >Design product for delayed packaging to support cross-docking. |
| Parallel processing. >Translate series functions to parallel functions. >Decouple processes to support parallel functions. |
| Standardization. >Aggregate demand to support risk pooling and economies of scale. >Create modularity. Create a modular product and/or modular process. |

|  |  |  |
| --- | --- | --- |
|  | ***Standardization*** |  |
|  |  | Process NOT Modular | Modular Process |  |
|  | Modular Product | 1. Part Standardization | 2. Process Standardization |  |
|  | Product NOT Modular | 3. Product Standardization | 4. Procurement Standardization |  |
|  |  |  |  |  |  |  |
|  | 1. Part Standardization.  >Commonality |  |
|  | 2. Process Standardization.  >Postponement or Delayed Product Differentiation. >Process re-sequencing to support postponement. >Modularity of products through re-sequencing of processes to support postponement. |  |
|  | 3. Product Standardization.  >Downward substitution.  >Super product design. |  |
|  | 4. Procurement Standardization.  >Equipment procurement to meet multiple internal process needs. |  |
|  |  |  |
|  | Where would PUSH-PULL boundary occur?What are Drivers for location?How does Outsourcing correspond to DFL? |  |
|  |  |  |

**Extend production system design to “Mass Customization”**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |
|  | Craft production |  |  |  |  |  | IncreasedVariety and Service |  |
|  |  |  |  |  |  |  |
|  |  |  |  | Mass customization |  |  |  |  |
|  |  |  |  |  |  | DecreasedCost and Time to market |  |
|  | Mass production |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  | Most effective attributes in supporting mass customization: *Instantaneousness – Costless – Seamless – Frictionless* |  |
|  |  |  |  |  |  |  |  |  |